

Jan. 1892.

of the Moon, 1891 Nov. 15.

167

Star's No.	Mag.	Phenomenon.	GILL,	FINLAY.			Perr.	Oox.
				h	m	s		
(42) Probably	D	(South of ★ No. 40.)	4 23 46.3	...	...	...	...	...
40	10-11		4 27 37.4	4 27 39.4	4 27 37.9	4 27 37.3		
25	9.5	R	4 35 17.3	Not certain.	Sharp disappearance.		Not seen till too late.	
			Bad observation.	Star not seen.	Not seen till clear of limb.			
38	10-11	D	...	...	...	...	...	...
46	9.5	D	...	Star not seen.	...	...	...	...
31	9.0	R	4 40 23.8	4 40 35.2	4 40 23.3	...	...	...
			Very good; star within moon's limb when first seen.	Very good; star within moon's limb when first seen.	[Note probably miscounted to sees. D.G.]			
51	11	D	Lost before reaching limb.	Cloud passing at time.	Lost sight of when nearing limb.		Too faint.	
50	11	D	4 57 9.0	Cloud passing at time.	Lost sight of near limb.		Too faint.	
34	10-11	R	5 8 19±	5 8 16.6	...	...	...	...
58	11	D	Too faint.	Star not seen.	...	...	Too faint.	

Star's No.	Mag.	Phenomenon.	GILL.	FINLAY.	PERR.	Cox.
54	9.2	D	5 11 35.2 Def. bad; limb boiling.	5 11 36.6 Good.	5 II 35.9	5 II 35.2 Good.
60	9.5	D	5 18 II	...	Lost sight of near limb.	...
38	10-II	R	5 21 15.2 Very good.	5 21 21.6 Good.	...	5 21 15.2 Good.
40	10-II	R	5 27 56.7	5 27 58.0 Very faint.	...	...
65	9.5	D	Star not seen.	Star not seen.	No star seen within five minutes of time.	Star not seen.
42	11-01	R	5 38 58.4	5 39 7.2 Good.	Not seen till clear of limb. Good.	5 39 8 Very rough.
46	9.5	R	5 52 24.2	5 52 20.9 Faint; slightly within limb when seen.	Not seen till clear of limb.	5 52 25.2
51	11	R	...	...	...	...
76	8	D	Star lost near limb.	Could not follow to limb.	Moon's limb too bright.	Limb boiling too much.
98	1	D	...	...	...	...

*Observations of the Total Eclipse of the Moon, 1891, November 15,
made at Edinburgh. By Ralph Copeland, Ph.D.*

At the Royal Observatory, Calton Hill, the sole result that could be secured was the immersion of the 11 mag. star No. 59 of Dr. Döllen's list, which disappeared suddenly at 11^h 44^m 13^s.2, Greenwich mean time. Observer, Mr. Thomas Heath, with the 24-inch reflector and a power of 138.

At Blackford Hill, on the site of the new observatory, I followed the eclipse with an achromatic eye-piece, magnifying sixty-four times on the 12-inch Browning reflector. During the whole of the eclipse the clouds were very troublesome, but most of all during the total phase; hence not a single one out of twenty-one predicted occultation phenomena was visible. The beginning of the eclipse was also completely hidden; but about a quarter of an hour later the clouds broke somewhat, so that a number of ingresses of craters were recorded, as were also the beginning and end of totality, together with a few egresses of lunar features. With the power used the shading of the margin of the shadow deepened quite gradually, until within about the width of *Tycho* (40') of the full shadow; thence it rapidly increased in density. The inner (darker) border of this inner shading was considered as marking the edge of the true shadow.

Greenwich
Mean Time.
h m s

10 53 0	Plato, ingress of 1st edge.
10 54 0	Plato, ingress of 2nd edge.
11 3 57	Manilius, ingress of 1st edge.
11 4 23	Manilius, ingress of 2nd edge.
11 7 8	Menelaus, ingress of centre.
11 10 9	Plinius, ingress of centre.
11 12 33	Tycho, ingress of 1st edge.
11 36 17	The shadow had apparently reached the Moon's limb; the disc, however, seemed suddenly to light up again as if the total phase had not actually commenced.
11 37 47	Moon certainly completely within the shadow.
13 0 0	Clear for a short time. Moon of a beautiful orange-copper colour. All the chief markings distinctly visible.
13 0 56	End of total phase.
13 2 44	Grimaldi, egress of 1st edge.
13 3 29	Grimaldi, egress of 2nd edge.
13 13 0	Moon clear for a moment. The markings within the shadow almost altogether invisible. Shadow of a steel-grey tint.
13 18 16	Tycho, egress of 1st edge.
13 20 12	Tycho, egress of 2nd edge.
13 23 21	Copernicus, egress of centre.
13 23 58	Copernicus, egress of 2nd edge.

All the later phenomena were hidden by the clouds, which, however, cleared off for a few hours just after the end of the eclipse.